

ABSTRACT

A general, efficient, and environmentally friendly method is provided for producing mostly β -epoxides of Δ^5 -unsaturated steroids using certain ketones as the catalyst along with an oxidizing agent, or by using certain dioxiranes. In another aspect of the invention, a method is provided for producing mostly $5\beta,6\beta$ -epoxides of steroids from Δ^5 -unsaturated steroids having a substituent at the 3α -position by an epoxidation reaction using a ketone along with an oxidizing agent under conditions effective to generate epoxides, or using a dioxirane under conditions effective to generate epoxides. A whole range of Δ^5 -unsaturated steroids, bearing different functional groups such as hydroxy, carbonyl, acetyl or ketal group as well as different side chains, were conveniently converted to the corresponding synthetically and biologically interesting $5\beta,6\beta$ -epoxides with excellent β -selectivities and high yields.